WHAT IS CLAIMED IS:

1. A cathode ray tube with a panel, the panel comprising:

an inside surface having a designated curvature;

a central portion having a transmission rate of 45-75%;

an outside surface being substantially flat with a flatness ratio (F) satisfying a mathematical formula of $F = \frac{Ro}{Sd \times 1.767}$, where Ro denotes a diagonal curvature radius of the outside surface, *Sd* denotes a diagonal length of an effective surface of the panel, and the flatness ratio (F) of the outside surface is greater than 17; and

a thickness at the central portion of the panel (CFT), a thickness of a vertical axis end (Tv), and a thickness of a diagonal end (Td), wherein CFT, Tv, and Td satisfy conditions of $1.4 < Td/CFT < 2.2$ and $0.85 < Tv/Td < 1.0$.

2. The cathode ray tube as claimed in claim 1, satisfying a condition of $0.13 < OAH/Sd < 0.17$, wherein OAH denotes a length of a skirt portion of the panel and Sd denotes the diagonal length of the effective surface.

3. The cathode ray tube as claimed in claim 1, wherein a diagonal curvature radius (Rd) of the inside surface of the panel satisfies a relation of $2.0R < Rd < 4.5R$, wherein 1R=1.767 x *Sd*.

4. The cathode ray tube as claimed in claim 3, wherein a vertical curvature radius of the inside surface of the panel, Rv, and a horizontal curvature radius of the inside surface of the panel, Rh, satisfy a relation of $3.0R < Rh < 6.5R$ and $1.2R < Rv < 3.5R$, respectively, wherein 1R=1.767 x *Sd*.

5. The cathode ray tube as claimed in claim 1, satisfying conditions of 10mm < (Td – CFT) < 15mm, 4mm < (Th – CFT) < 8mm, and 8mm < (Tv-CFT) < 12mm, wherein Th denotes a thickness of a horizontal axis end of the panel.

6. The cathode ray tube as claimed in claim 1, wherein each thickness of the panel satisfies conditions of 1.4 < Td/CFT < 2.0 and 0.93 < Tv/Td < 1.0.

7. The cathode ray tube as claimed in claim 6, satisfying a condition of 0.146 < OAH/Sd < 0.17, where OAH denotes a length of a skirt portion of the panel.

8. The cathode ray tube as claimed in claim 6, wherein a diagonal curvature radius (Rd) of the inside surface of the panel satisfies a relation of 2.0R < Rd < 4.5R, where 1R=1.767 x *Sd*.

9. The cathode ray tube as claimed in claim 8, wherein a vertical curvature radius of the inside surface of the panel, Rv, and a horizontal curvature radius of the inside surface of the panel, Rh, satisfy a relation of 3.0R < Rh < 6.5R and 1.2R < Rv < 3.5R, respectively, where 1R=1.767 x *Sd*.

10. The cathode ray tube as claimed in claim 6, wherein the panel satisfys conditions of 10mm < (Td – CFT) < 15mm, 4mm < (Th – CFT) < 8mm, and 8mm < (Tv-CFT) < 12mm, wherein Th denotes a thickness of a horizontal axis end of the panel.

11. A cathode ray tube with a panel, the panel comprising:

a central portion having a transmission rate of 45-75%;

an outside surface being substantially flat with a flatness ratio (F) satisfying a mathematical formula of $F = \frac{Ro}{Sd \times 1.767}$, where Ro denotes a diagonal curvature radius of the

outside surface, *Sd* denotes a diagonal length of an effective surface of the panel, and the flatness ratio (F) of the outside surface is greater than 17; and

an inside surface having a designated curvature, in which a diagonal curvature radius of the inside surface (Rd), a vertical curvature radius of the inside surface (Rv), and a horizontal curvature radius of the inside surface (Rh), wherein Rd, Rv, and Rh satisfy conditions of $1.0 < Rh/Rd < 1.9$ and $0.3 < Rv/Rd < 0.9$.

12. The cathode ray tube as claimed in claim 11, wherein the panel satisfys a condition of $0.13 < OAH/Sd < 0.17$, where OAH denotes a length of a skirt portion of the panel.

13. The cathode ray tube as claimed in claim 11, wherein Rd satisfies a relation of $2.0R < Rd < 4.5R$, where $1R=1.767 \times Sd$.

14. The cathode ray tube as claimed in claim 13, wherein Rv and Rh satisfy a relation of $3.0R < Rh < 6.5R$ and $1.2R < Rv < 3.5R$, respectively, where $1R=1.767 \times Sd$.

15. The cathode ray tube as claimed in claim 11, wherein the panel satisfys conditions of $10mm < (Td - CFT) < 15mm$, $4mm < (Th - CFT) < 8mm$, and $8mm < (Tv-CFT) < 12mm$, wherein CFT denotes a thickness of a central portion of the panel; Tv denotes a thickness of a vertical axis end of the panel; Td denotes a thickness of a diagonal end of the panel; and Th denotes a thickness of a horizontal axis end of the panel.

16. The cathode ray tube as claimed in claim 11, wherein the radii Rd, Rv, and Rh satisfy a relation of $Rv < Rd < Rh$.

17. The cathode ray tube as claimed in claim 11, wherein the radii Rh, Rd, and Rv of the panel satisfy the conditions of $1.0 < Rh/Rd < 1.3$ and $0.3 < Rv/Rd < 0.9$.

18. The cathode ray tube as claimed in claim 17, wherein the panel satisfys a condition of $0.146 < OAH/Sd < 0.17$, wherein OAH denotes a length of a skirt portion of the panel.

19. The cathode ray tube as claimed in claim 17, wherein the radius Rd satisfies a relation of $2.0R < Rd < 4.5R$, wherein $1R=1.767 \times Sd$.

20. The cathode ray tube as claimed in claim 19, wherein Rh and Rv satisfy a relation of $3.0R < Rh < 6.5R$ and $1.2R < Rv < 3.5R$, respectively, wherein $1R=1.767 \times Sd$.

21. The cathode ray tube as claimed in claims 17, wherein the panel satisfies conditions of $10mm < (Td - CFT) < 15mm$, $4mm < (Th - CFT) < 8mm$, and $8mm < (Tv\text{-}CFT) < 12mm$, wherein CFT denotes a thickness of a central portion of the panel; Tv denotes a thickness of a vertical axis end of the panel; Td denotes a thickness of a diagonal end of the panel; and Th denotes a thickness of a horizontal axis end of the panel.

22. The cathode ray tube as claimed in claim 17, wherein the radii Rd, Rv, and Rh satisfy a relation of $Rv < Rd < Rh$.

23. A cathode ray tube with a panel, the panel comprising:

an inside surface having a designated curvature;

a central portion with a transmission rate of 45-75% and a ratio of the transmission rate at the peripheral portion of the panel to a transmission rate at a central portion of the panel is in the range of 50-65%; and

an outside surface being substantially flat, wherein an arbitrary point, P (x, y, z), on the outside surface of the panel satisfies a condition of

$$20,000mm \le \frac{(\sqrt{x^2 + y^2})^2 + z^2}{2 \times z} \le 70,000mm .$$

24. The cathode ray tube as claimed in claim 23, wherein the ratio of the transmission rate at the peripheral portion of the panel to the transmission rate at the central portion of the panel is in the range of about 55-65%.

25. The cathode ray tube as claimed in claim 23, wherein the arbitrary point, P (x, y, z), on the outside surface of the panel satisfies a condition of $20,000mm \le \frac{(\sqrt{x^2+y^2})^2+z^2}{2\times z} \le 50,000mm$.

26. The cathode ray tube as claimed in claim 23, wherein the arbitrary point, P (x, y, z), on the outside surface of the panel satisfies a condition of $20,000mm \le \frac{(\sqrt{x^2+y^2})^2+z^2}{2\times z} \le 25,000mm$.

27. The cathode ray tube as claimed in claim 23, wherein an arbitrary point, Q (x, y, z), on the inside surface of the panel satisfies a condition of $3,500mm \le \frac{(\sqrt{x^2+y^2})^2+z^2}{2\times z} \le 5,000mm$.

28. A cathode ray tube with a panel, the panel comprising:

an inside surface having a designated curvature;

a central means having a transmission rate of 45-75%;

an outside surface means being substantially flat with a flatness ratio (F) satisfying a mathematical formula of $F = \frac{Ro}{Sd \times 1.767}$, where Ro denotes a diagonal curvature radius of the outside surface means, *Sd* denotes a diagonal length of an effective surface of the panel, and the flatness ratio (F) of the outside surface is greater than 17; and

a thickness at the central portion of the panel (CFT), a thickness of a vertical axis end (Tv), and a thickness of a diagonal end (Td), wherein CFT, Tv, and Td satisfy conditions of $1.4 < Td/CFT < 2.2$ and $0.85 < Tv/Td < 1.0$.

29. The cathode ray tube as claimed in claim 1, wherein the panel satisfying a condition of $0.13 < OAH/Sd < 0.17$, wherein OAH denotes a length of a skirt portion of the panel and Sd denotes the diagonal length of the effective surface.

30. The cathode ray tube as claimed in claim 1, wherein a diagonal curvature radius (Rd) of the inside surface of the panel satisfies a relation of $2.0R < Rd < 4.5R$, wherein $1R=1.767 \times Sd$.

31. The cathode ray tube as claimed in claim 3, wherein a vertical curvature radius of the inside surface of the panel, Rv, and a horizontal curvature radius of the inside surface of the panel, Rh, satisfy a relation of $3.0R < Rh < 6.5R$ and $1.2R < Rv < 3.5R$, respectively, wherein $1R=1.767 \times Sd$.

32. The cathode ray tube as claimed in claim 1, wherein the panel satisfies conditions of $10mm < (Td - CFT) < 15mm$, $4mm < (Th - CFT) < 8mm$, and $8mm < (Tv\text{-}CFT) < 12mm$, wherein Th denotes a thickness of a horizontal axis end of the panel.